IN THE CLAIMS:

1-4. (cancelled)

5. (currently amended) ~~The process of Claim 4, wherein the step of broadcasting streams of packetized error correction information comprises the step of~~ A computer-implemented error correction process for use in a receiver-driven layered multicast of real-time media over a heterogeneous packet network to a plurality of receivers, wherein the real-time media is transmitted over the network in multiple streams of packetized source data forming hierarchical layers of information, said error correction process comprising using a computer to perform the following steps:

producing multiple streams of packetized error correction information for each of the streams of packetized source data, wherein each error correction stream comprises parity packets encoded from packets of the source data which have been subjected to a linear transform, said linear transform producing a series of parity packets which can be employed by a receiver to assist in the recovery of lost source data packets using a reverse transform;

multicasting each stream of packetized error correction information to said receivers to allow each receiver to recover packets of source data lost during transmission, said multicasting comprising,

associating each stream of packetized error correction information with a one of the multiple streams of packetized source data,

incorporating in each error correction stream information necessary to assist a receiver in recovering said packets of lost source data belonging to the particular stream of packetized source data associated with the error correction stream, wherein said information incorporated in each error correction stream associated with the same source data stream makes the streams redundant thereby making it possible for a receiver to employ more than

one error correction stream and obtain a desired amount of the error correction information needed to replace packets in an associated source data stream that were lost during the transmission even if some of the error correction stream packets themselves are lost in transmission, and

incorporating an identifier into each packet in each of the streams of packetized error correction information wherein a different identifier is employed for each of the error correction information streams, thereby allowing each receiver to select the number of error correction information streams to be received by specifying that only packets having particular identifiers be routed over the network to the receiver.

6. (original) The process of Claim 5, further comprising the step of a receiver improving the quality of the received broadcast by first selecting a desired number of source data streams while leaving enough bandwidth available to also select a number of error correction information streams for one or more of the source streams that will compensate, at least partially, for an inherent packet loss rate associated with the receiver's connection to the network, and then selecting said number of error correction information streams.

7-8. (cancelled)

9. (currently amended) ~~The process of Claim 8 wherein the receiving step comprises the steps of:~~ A computer-implemented process for multicasting real-time media over a heterogeneous packet network to a plurality of receivers, comprising using a computer to perform the following steps:

forming a series of source data streams from a media signal, said source data streams comprising a base layer representing the media signal at a least acceptable level of quality, and at least one enhancement layer which when combined with the base layer improves the level of quality of the media signal derivable therefrom;

for each source data stream, creating at least one error correction information stream from the source layer, wherein each error correction stream comprises parity packets encoded from packets of the source data stream which have been subjected to a linear transform, said linear transform producing a series of parity packets which can be employed to assist in the recovery of lost source data packets using a reverse transform, and wherein creating each error correction stream comprises,

(a) partitioning the source data stream into a plurality of data blocks each containing k data packets,

(b) selecting a previously unselected data block,

(c) applying a Forward Error Correction (FEC) encoding technique to the chosen data block to produce n-k parity packets for that block where n > k,

(d) assigning each parity packet to a different error correction stream, and

(e) repeating steps (b) through (d) for each data block;

respectively multicasting each source layer and error correction layer to a different network address for routing on to a receiver; and

for each receiver, receiving at least one source data stream and at least one error correction layer, and reconstructing a media signal from the at least one source data stream after having used the at least one error correction stream to recover source data packets lost in transmission of the source data stream, wherein said receiving comprises,

subscribing over the network to at least one source data stream and at least one error correction information stream;, and

for each subscribed to source data stream,

(i) receiving source data stream packets comprising a next incoming source data block of the subscribed to source data stream;,

(ii) receiving parity packets associated with the incoming source data block in the subscribed to error correction information

stream or streams;,

(iii) determining whether the total number of source data stream packets and parity packets received for the incoming source data block is at least equal the number of source data stream packets multicast for the block;,

(iv) whenever the total number of source data stream packets and parity packets received for the incoming source data block equals or exceeds the number of source data stream packets multicast for the block, recovering all the source data stream packets missing in the incoming source data block using the received parity packets,

(v) replacing said missing source data stream packets using the recovered packets, and

(vi) repeating steps (i) through (v) for each successive incoming source data block.

10. (original) The process of Claim 9, wherein the subscribing step comprises the steps of:

determining a currently available bandwidth associated with the receiver's connection to the network;

determining a current packet loss rate associated with receiving data over the network;

selecting at least one source data stream and at least one associated error correction stream which are to be received so as to allow the best possible level of quality in a media signal reconstructed from received source data streams, wherein said selecting is based on the currently available bandwidth and the current packet loss rate; and

subscribing to each selected source data stream and each selected error correction information stream.

11-14. (cancelled)

15. (currently amended) ~~The system of Claim 14, wherein the program module for multicasting streams of packetized error correction information comprises a sub-module for~~ An error correction system for use in a receiver-driven layered multicast of real-time media over a heterogeneous packet network to a plurality of receivers, wherein the real-time media is transmitted over the network in multiple streams of packetized source data forming hierarchical layers of information, said error correction system comprising:

a general purpose computing device;

a computer program comprising program modules executable by the computing device, wherein the computing device is directed by the program modules of the computer program to,

produce multiple streams of packetized error correction information for each of the streams of packetized source data, wherein each error correction stream comprises parity packets encoded from packets of the source data which have been subjected to a linear transform, said linear transform producing a series of parity packets which can be employed by a receiver to assist in the recovery of lost source data packets using a reverse transform,

multicast each stream of packetized error correction information to said receivers to allow each receiver to recover packets of source data lost during transmission, said multicasting comprising,

associating each stream of packetized error correction information with a one of the multiple streams of packetized source data,

incorporating in each error correction stream information necessary to assist a receiver in recovering said packets of lost source data belonging to the particular stream of packetized source data associated with the error correction stream, wherein said information incorporated in each error correction stream associated with the same source data stream makes the streams redundant thereby making it possible for a

receiver to employ more than one error correction stream and obtain a desired amount of the error correction information needed to replace packets in an associated source data stream that were lost during the transmission even if some of the error correction stream packets themselves are lost in transmission, and

incorporating an identifier into each packet in each of the streams of packetized error correction information wherein a different identifier is employed for each of the error correction information streams, thereby allowing each receiver to select the number of error correction information streams to be received by specifying that only packets having particular identifiers be routed over the network to the receiver.

16. (original) The system of Claim 15, further comprising a program module for allowing a receiver to improve the quality of the received broadcast by first selecting a desired number of source data streams while leaving enough bandwidth available to also select a number of error correction information streams for one or more of the source streams that will compensate, at least partially, for an inherent packet loss rate associated with the receiver's connection to the network, and then selecting said number of error correction information streams.

17-18. (cancelled)

19. (currently amended) ~~The system of Claim 18 wherein the receiving program module comprises sub-modules for:~~ An error correction system for multicasting real-time media over a heterogeneous packet network to a plurality of receivers, comprising:

a general purpose computing device;

a computer program comprising program modules executable by the computing device, wherein the computing device is directed by the program

modules of the computer program to,

form a series of source data streams from a media signal, said source data streams comprising a base layer representing the media signal at a least acceptable level of quality, and at least one enhancement layer which when combined with the base layer improves the level of quality of the media signal derivable therefrom,

for each source data stream, create at least one error correction information stream from the source layer, wherein each error correction stream comprises parity packets encoded from packets of the source data stream which have been subjected to a linear transform, said linear transform producing a series of parity packets which can be employed to assist in the recovery of lost source data packets using a reverse transform, and wherein creating each error correction stream comprises,

(a) partitioning the source data stream into a plurality of data blocks each containing k data packets,

(b) selecting a previously unselected data block,

(c) applying a Forward Error Correction (FEC) encoding technique to the chosen data block to produce n-k parity packets for that block where $n > k$,

(d) assigning each parity packet to a different error correction stream, and

(e) repeating steps (b) through (d) for each data block,

respectively multicasting each source layer and error correction layer to a different network address for routing on to a receiver, and

for each receiver, receiving at least one source data stream and at least one error correction layer, and reconstructing a media signal from the at least one source data stream after having used the at least one error correction stream to recover source data packets lost in transmission of the source data stream, wherein said receiving comprises,

subscribing over the network to at least one source

data stream and at least one error correction information stream, and

for each subscribed to source data stream,

(i) receiving source data stream packets comprising a next incoming source data block of the subscribed to source data stream;

(ii) receiving parity packets associated with the incoming source data block in the subscribed to error correction information stream or streams;

(iii) determining whether the total number of source data stream packets and parity packets received for the incoming source data block is at least equal the number of source data stream packets multicast for the block;

(iv) whenever the total number of source data stream packets and parity packets received for the incoming source data block equals or exceeds the number of source data stream packets multicast for the block, recovering all the source data stream packets missing in the incoming source data block using the received parity packets,

(v) replacing said missing source data stream packets using the recovered packets, and

(vi) repeating steps (i) through (v) for each successive incoming source data block.

20. (original) The system of Claim 19, wherein the subscribing sub-module comprises sub-modules for:

determining a currently available bandwidth associated with the receiver's connection to the network;

determining a current packet loss rate associated with receiving data over the network;

selecting at least one source data stream and at least one associated error correction stream which are to be received so as to allow the best possible level of quality in a media signal reconstructed from received

source data streams, wherein said selecting is based on the currently available bandwidth and the current packet loss rate; and

subscribing to each selected source data stream and each selected error correction information stream.

21-24. (cancelled)

25. (currently amended) ~~The computer-readable memory of Claim 24, wherein the program module for multicasting streams of packetized error correction information comprises a sub-module for~~ A computer-readable memory for use in a receiver-driven layered multicast of real-time media over a heterogeneous packet network to a plurality of receivers, wherein the real-time media is transmitted over the network in multiple streams of packetized source data forming hierarchical layers of information, comprising:

a computer-readable storage medium; and

a computer program comprising program modules stored in the storage medium, wherein the storage medium is so configured by the computer program that it causes the computer to,

produce multiple streams of packetized error correction information for each of the streams of packetized source data, wherein each error correction stream comprises parity packets encoded from packets of the source data which have been subjected to a linear transform, said linear transform producing a series of parity packets which can be employed by a receiver to assist in the recovery of lost source data packets using a reverse transform,

multicast each stream of packetized error correction information to said receivers to allow each receiver to recover packets of source data lost during transmission, said multicasting comprising,

associating each stream of packetized error correction information with a one of the multiple streams of packetized source data,

incorporating in each error correction stream information necessary to assist a receiver in recovering said packets of lost source data belonging to the particular stream of packetized source data associated with the error correction stream, wherein said information incorporated in each error correction stream associated with the same source data stream makes the streams redundant thereby making it possible for a receiver to employ more than one error correction stream and obtain a desired amount of the error correction information needed to replace packets in an associated source data stream that were lost during the transmission even if some of the error correction stream packets themselves are lost in transmission, and

incorporating an identifier into each packet in each of the streams of packetized error correction information wherein a different identifier is employed for each of the error correction information streams, thereby allowing each receiver to select the number of error correction information streams to be received by specifying that only packets having particular identifiers be routed over the network to the receiver.

26. (original) The computer-readable memory of Claim 25, further comprising a program module for allowing a receiver to improve the quality of the received broadcast by first selecting a desired number of source data streams while leaving enough bandwidth available to also select a number of error correction information streams for one or more of the source streams that will compensate, at least partially, for an inherent packet loss rate associated with the receiver's connection to the network, and then selecting said number of error correction information streams.

27-28. (cancelled)

29. (currently amended) ~~The computer-readable memory of Claim 28~~

~~wherein the receiving program module comprises sub-modules for:~~ A computer-readable memory for multicasting real-time media over a heterogeneous packet network to a plurality of receivers, comprising:

a computer-readable storage medium; and

a computer program comprising program modules stored in the storage medium, wherein the storage medium is so configured by the computer program that it causes the computer to,

form a series of source data streams from a media signal, said source data streams comprising a base layer representing the media signal at a least acceptable level of quality, and at least one enhancement layer which when combined with the base layer improves the level of quality of the media signal derivable therefrom,

for each source data stream, create at least one error correction information stream from the source layer, wherein each error correction stream comprises parity packets encoded from packets of the source data stream which have been subjected to a linear transform, said linear transform producing a series of parity packets which can be employed to assist in the recovery of lost source data packets using a reverse transform, and wherein creating each error correction stream comprises,

(a) partitioning the source data stream into a plurality of data blocks each containing k data packets,

(b) selecting a previously unselected data block,

(c) applying a Forward Error Correction (FEC) encoding technique to the chosen data block to produce n-k parity packets for that block where $n > k$,

(d) assigning each parity packet to a different error correction stream, and

(e) repeating steps (b) through (d) for each data block,

respectively multicasting each source layer and error correction layer to a different network address for routing on to a receiver; and

for each receiver, receiving at least one source data stream and at least one error correction layer, and reconstructing a media signal from the at least one source data stream after having used the at least one error correction stream to recover source data packets lost in transmission of the source data stream, wherein said receiving comprises,

subscribing over the network to at least one source data stream and at least one error correction information stream;, and

for each subscribed to source data stream,

(i) receiving source data stream packets comprising a next incoming source data block of the subscribed to source data stream;,

(ii) receiving parity packets associated with the incoming source data block in the subscribed to error correction information stream or streams;,

(iii) determining whether the total number of source data stream packets and parity packets received for the incoming source data block is at least equal the number of source data stream packets multicast for the block;,

(iv) whenever the total number of source data stream packets and parity packets received for the incoming source data block equals or exceeds the number of source data stream packets multicast for the block, recovering all the source data stream packets missing in the incoming source data block using the received parity packets,

(v) replacing said missing source data stream packets using the recovered packets, and

(vi) repeating steps (i) through (v) for each successive incoming source data block.

30. (original) The computer-readable memory of Claim 29, wherein the subscribing sub-module comprises sub-modules for:

determining a currently available bandwidth associated with the

receiver's connection to the network;

determining a current packet loss rate associated with receiving data over the network;

selecting at least one source data stream and at least one associated error correction stream which are to be received so as to allow the best possible level of quality in a media signal reconstructed from received source data streams, wherein said selecting is based on the currently available bandwidth and the current packet loss rate; and

subscribing to each selected source data stream and each selected error correction information stream.